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Collateral in 2019

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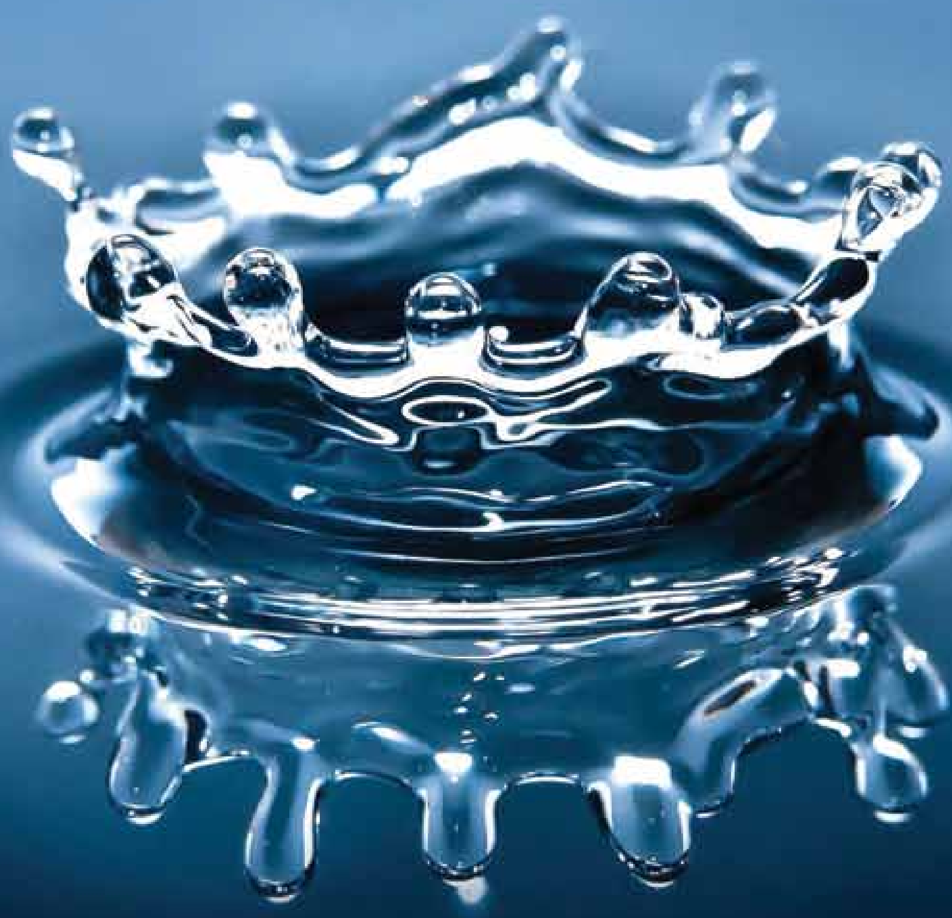

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Introduction

Accelerating innovation in collateral management

Collateral management has come a long way in the past two decades. Just 20 years ago, couriers were hounding around the City with paper share certificates to transfer titles, collateral allocation and selection was done on spreadsheets and optimisation didn't exist.

The uses of and need for collateral were also vastly different from today. The stock lending business was the exclusive preserve of a handful of major international players, variation margin was hardly exchanged against over-the-counter positions and the need to mobilise collateral was rarely urgent.

Much has changed. Post-crisis regulatory reform has dramatically increased the requirement to manage collateral at a time that cost pressures have forced financial institutions to seek out efficiency.

Providers of collateral services and technology have responded with new tools to automate processes and reduce costs.

New concepts have been introduced. Financial institutions today are well down the path towards granular calculations of collateral costs. Algorithms dominate selection decisions and new technology is reducing the inefficiency in interactions between market participants. Processes around collateral schedules and allocations are increasingly digitised and collateral has become a centralised function for many firms.

But in other respects, little has changed. Many of the processes and methods of collateral management and mobility today, while much more efficient and automated, would be recognisable to the executive of 20 years ago.

However, new technologies in the form of machine learning, big data processing and distributed ledgers look set to revolutionise the collateral industry, massively reducing inefficiencies and moving towards a global, frictionless and even more secure environment for the pricing, transfer and settlement of collateral.

This study is based on interviews with numerous experts in the collateral industry some of whom are quoted throughout the report. It is split into three parts: the first looks at best practice today; the second towards the potential impact of disruptive technology; and the third asks what a perfect collateral environment looks like and whether it is viable.

This study focuses on banks and broker-dealers who have been driven by necessity to work with established and new providers to drive innovations. But the lessons are applicable to the buyside who are likely to follow in the banks' footsteps and adopt many of the processes that have been developed. ■

Part 1: The drivers of change: best practice in collateral efficiency today

Collateral management is like learning a foreign language. Most people know a few buzzwords, everyone understands how much they would benefit from advanced knowledge, some have used technology to satisfy basic needs, but few have taken major steps to fully master the subject.

The financial crisis has been followed by regulatory reform, increased capital costs, heightened awareness of counterparty risk and a squeeze on profit margins. This has forced banks and broker-dealers to lead the charge to a more sophisticated understanding of collateral and for greater efficiency across the management process.

This drive has brought with it innovations in collateral optimisation algorithms, moves towards holistic enterprise collateral management, which broke down the silos within organisations, and a renewed consideration of the potential gains resulting from outsourcing parts of the collateral process either to a third-party technology vendor or to a collateral manager or triparty agent.

But complexity in collateral is escalating almost as fast -- if not as fast -- as the increasing sophistication of collateral processing. Capital charges and leverage ratios for banks are adding new calculations to optimal allocation methodologies. New clearing rules mean more collateral is required for certain exposures and new regulations are increasing transparency and reporting obligations.

All this adds to the cost of day-to-day business operations, which further drives the need for efficiency across portfolios, whether through increasing visibility and the centralisation of pools of collateral to ensure the most cost-effective asset is always posted, automating collateral selection and transfer to reduce costs or the potential for costly human error, or simply to ensure that all assets that can be mobilised are mobilised and not sitting dormant on balance sheets.

BEN CHALLICE

FROM THE BACK OFFICE TO THE BOARDROOM: COLLATERAL TAKES CENTRE STAGE

Collateral optimisation has been a buzzword in the industry for over a decade. The term historically has referred primarily to the centralisation of collater-

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– Ben Challice, J.P. Morgan

> **"There are a whole raft of variables that a trader must be cognisant of when executing today that just weren't considerations in the past and these are often complex and interdependent."**
> *– Phil Morgan, Pirum Systems*

al pools across desks and silos within financial institutions and the ability to match assets against liabilities based on detailed calculations of uses, eligibility and the cost of deployment.

The cheapest-to-deliver concept had dominated with advances in technology mainly related to deploying more sophisticated algorithms in that they include more metrics and a move from linear to non-linear calculations bringing in more external data points to calculate the true cost of an asset.

Ben Challice, global head of agency financing and collateral management at J.P. Morgan, says that collateral management has changed significantly in importance in the industry: "Collateral management today is core to how people run their businesses. It has moved from a back-office, cheapest to deliver process to being centrally managed and driving pre-trade decisions across an organisation."

Post-crisis regulatory reform has led to monumental change in collateral management.

Some 20 years ago, all that mattered to a trader pre-trade was whether that trade was going to make money. At that point, optimisation meant asking if there was a more profitable trade that could be done at that time.

Today traders have to take into account capital, risk-weighted assets, balance sheet implications as well as credit exposure both from a counterparty and a geographical perspective, and myriad other factors before a trade can be executed.

"There are a whole raft of variables that a trader must be cognisant of when executing today that just weren't considerations in the past and these are often complex and interdependent," says Phil Morgan, chief commercial officer at Pirum Systems.

NEW WAYS OF THINKING ABOUT THE COST OF COLLATERAL

This additional complexity led institutions to evolve their thinking about collateral across the organisation. Much work has been done by financial institutions to centralise collateral pools, break down the silos between asset classes and trading desks and functions (repo, securities lending, derivatives etc) and geographies to create single views of assets held across an organisation in order to optimise collateral allocation.

Triparty agents (TPAs), outsourced collateral management providers and software vendors have been able to offer additional sophistication benefits by running optimisation and allocation tools over a wider pool of assets resulting in a more efficient allocation.

Within a triparty structure, firms have the capacity to set rulesets, schedules and baskets of collateral. This enables them to automate collateral selection and outsource the process of optimisation, substitutions, settlement and managing daily margin calls.

Using triparty, firms can deliver a basket of securities and optimise a deep, broad book of globally sourced assets. Because of continued investment, TPAs have developed sophisticated tools for optimising collateral allocation that is not limited to the cheapest-to-deliver asset against any exposure and have done the majority of the work around optimisation.

But, over the past five years, financial institutions have also faced increasing liquidity constraints resulting from new capital and liquidity rules.

As a result, TPAs can only go so far in the optimisation process. Their algorithms can only be run against assets under their control, and only against objective metrics and measures for each asset. Increasingly this is not enough to provide true optimisation and crucially to satisfy internal treasury departments.

Of all the new rules and regulations, the Liquidity Coverage Ratio (LCR), which has been introduced in stages since 2011 and in part requires banks to hold up to 100% of liquid assets against 30-day net cash flows as well as imposing other additional capital requirements, has had the biggest impact.

A result of the LCR, the funding cost of an asset within a bank is now specific not just to the objective and external metrics traditionally calculated by optimisation tools but also to the broader and unique liquidity profile of that specific bank on that specific day.

"In today's market, a bank needs to understand not just the cheapest way to deliver and to allocate the lowest grade eligible assets first, it also requires a deep understanding of liquidity conditions and needs to embed those calculations in liquidity frameworks across the firm," says Jamie Purnell, head of equity finance EMEA at Nomura.

SOURCES VS USES

The LCR has also resulted in the need to calculate the funding cost of an asset based on where it came from because the same or similar securities are subject to different treatment under the LCR depending on their sources.

"One bluechip share coming from a hedge fund needs to be treated differently from one coming from a trading book which needs to be treated differently from one coming from a reverse repo to cover a short," says Purnell.

Graham Gooden, EMEA and APAC head of Agency Collateral Management at J.P. Morgan, says that this differentiation between sources and uses is forcing change among the firm's client base.

"More sophisticated clients are looking deeper into the sources and uses of collateral," he says. "They understand that two different lines of stock can have a different value depending on whether it is a house or a client asset and that moving an asset from one particular trade or counterparty to another might be more cost effective."

Understanding the liquidity constraints and funding costs of an asset is not just a question of pooling data sets and running broader optimisation calculations. Banks are also starting to think about how to breakdown account structures and change internal operational processes to direct the asset to the right place.

"It is much more complex than just creating an algorithm and sending a file. If the inputs such as asset reference data, pricing information, eligibility schedules or account structures differ, deploying an algorithms' output at a granular level becomes ineffective. The building blocks need to be put in place first," says Gooden.

J.P. MORGAN'S VIEW

SEEKING FLEXIBILITY?

The heightened focus on collateral optimisation can make it seem as if the right piece of technology could address any collateral need. We know that's just one part of the equation. Our clients are working to address sophisticated collateral demands within increasingly intricate parameters. As they manage across global desks, multiple legal entities and complex transactions, they recognise the value of partnering with an experienced agent that has on-the ground expertise and global pass-the-book capabilities.

Our global team of collateral experts understands our clients' need for flexibility and helps them manage activities globally or onshore, across securities or derivatives transactions. We provide asset safekeeping, risk mitigation and rigorous controls required to sustain market confidence. And, to help clients address their intraday funding and capital requirements, on-demand, intraday reporting and advanced modeling and mobilisation tools provide transparency and deliver timely information to support decision-making.

THE REGULATORY NUDGE

While regulatory change has done much to increase the complexity of collateral management, it also looks set to drive sophistication.

In the EU, the Securities Finance Transaction Regulation (SFTR) will come into force over the next three years and bring a multitude of new rules relating to transparency over collateral.

As part of the rules, firms will have to report what collateral they are receiving and holding. This will drive the need to have that data in a readily accessible format and matched against each trade.

These requirements are likely to drive the trend towards pre-optimisation optimisation within financial institutions.


GRAHAM GOODEN

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Purnell adds: “There are so many nuances with each asset. The sellside doesn’t have the ability to tag the assets but we need the ability to individually recognise the facets despite the fact it looks the same as 10 other assets you might hold from similar sources.”

CHANGING OPERATIONAL PROCESSES

To segment assets and keep within new capital buffers, some banks and broker-dealers are moving away from the traditional omnibus structure, under which all assets are directed to a single pool at the custodian or collateral agent.

Increasingly, they are creating multiple accounts with separate boxes defined for specific purposes whether that be house accounts, client accounts, overnight accounts or accounts earmarked specifically for different capital treatment.

This enables trading desks at banks to demonstrate to Treasury Departments they have held the right amount of liquidity against a liability globally and ensure that they are operating within limits and capital buffers.

“In simplest terms, in today’s world where outright positions require a minimum of 30 days funding, the secured funding desk at the bank has to take that specific asset and put it against a specific term financing trade where that specific asset must get allocated as collateral with the correlated account,” says Todd Crowther, head of business development and client innovation at Pirum Systems.

“To currently achieve this, many banks implement a hard-coded system to segregate assets using multiple dealer boxes and correspondingly are required to maintain excess collateral buffers in different locations.

“Furthermore, many utilise tri-party allocation drivers to try to achieve an optimal allocation of collateral. However, given the complexity of the allocation drivers, their variability over time and the volatility of many asset books, many challenges still remain.”

It also creates significant operational costs and friction. One bank participant in this study said it had taken more than nine months to go through the process of breaking down the internal flows and directing them to the right custody account. It is also now required to isolate assets with specific inflow caps and route them to the relevant account.

This increases the cost and complexity of doing business and was described by one bank as “a blunt Neanderthal approach to custody infrastructure in the absence of a better solution on the market today”.

Crowther agrees with the sentiment: “The industry is working together to try to get away from this sledgehammer approach and is looking for ways to be able to better pool assets, mobilise them, and direct them to the correct location. This requires tight coordination between the client and their counterpart and service providers from a pre-trade, trade and post-trade perspective.”

DEFINED ALLOCATION

This move towards a greater understanding of the funding cost of an asset at a firm level is resulting in a growing trend for defined allocation of securities in which the client will direct their collateral provider to allocate a specific asset against an exposure.

In some ways, this is a return to how the model worked in the past, says Gooden. "10 – 15 years ago, clients individually instructed an asset to move from account to account manually. Then as optimisation sophistication at triparty agents grew, they took on more responsibility for allocation.

"Today, with the increased complexity of the funding costs of assets (which tend to be bespoke per client) and advances in optimisation tools, clients of triparty are again taking more responsibility for allocation decisions. However, the process is now far more automated than it was historically."

Rather than relying on cheapest-to-deliver or highest quality assets first and lower quality collateral last, each client has their specific, bespoke binding constraint when it comes to what is optimal.

"We don't have the visibility on a client's exposure to a specific counterparty so there is a big demand from the dealers to do their own optimisation and then tell us what they would like to be allocated and we are building services around that," says Olivier Grimonpont, CEO of Global Collateral, a joint venture between Euroclear and DTCC.

GOING LOCAL: BRINGING FINANCING ONSHORE

Another trend being driven by the focus on funding at financial institutions is a move towards onshoring financing.

Historically, banks and broker-dealers would have tended towards a single global financing hub but this has changed over the past five years, says Ed Bond, J.P. Morgan's APAC head of agency lending and collateral management.

"Banks are moving towards a regional funding model in which financing is operated as an onshore process. As a result, they are moving more towards triparty agents. This is being driven by funding benefits, reduced settlement cycles, cross border issues and concerns around Brexit," he says.

Triparty adoption is growing across Asia, adds Bond, and is central to the facilitation of access to local innovations such as the Stock Connect programme between China and Hong Kong. Buyside adoption is also growing, he says.

But enabling the onshoring of financing has posed several logistical and regulatory challenges for triparty agents to accommodate. Even where TPAs offer a global platform, impediments have come from different regulatory structures and cross-border challenges.

"We have been working to ensure that clients in every region have global availability and access to global markets and, through a single platform, can pass the book within their own operations," says J.P. Morgan's Gooden.

"It has been a multi-faceted problem: it is not just technology, it is also regulatory, legal and dependent each local market practice."

The ability to mobilise assets across different jurisdictions and legal entities has created much greater efficiencies. Historically, financial institutions operating multiple markets would have tolerated some assets lying dormant in peripheral markets.

That tolerance has now gone and banks are looking to fully mobilise all assets. This has created burgeoning local markets fuelled by investments from the larger players to connect borrowers and lenders.

"In certain markets the supply comes from the banks and broker-dealers but in low interest rate markets you also have the demand coming from cash providers," says Michael Albanese, global head of collateral management at J.P. Morgan.

"They are not able to generate a return on their cash in a local market but, in exchange for a repo from a bank or broker-dealer, they are able to generate a higher return than they would in their home markets in exchange for taking a bit more risk with their onshore collateral.

"It has been a good meeting of minds with the cash providers or even securities lenders getting a higher return for a little more risk."

Tim Meredith, an executive director in sales at J.P. Morgan, adds: "From the client's perspective there are a lot of inter-entity movements. They have had to defund allocations and become more self-sufficient for regulatory purposes. We are very much driven by what the client wants to do but have to secure the legal infrastructure to enable the positions to move."

J.P. MORGAN'S VIEW

WHAT IF?

In addition to adjusting collateral allocation based on individual binding constraints, which can vary from day to day, we find that our clients are interested in looking at possibilities. Our simulation tools give them the ability to walk through 'what if' scenarios. For example, a client could assess whether (and which) collateral held away from the tri-party agent should be deployed into their tri-party programme. They can also create hypothetical collateral exposures to understand the impact of amending existing or new transactions. Walking through the options before execution can help inform better decision making and improve the speed of collateralisation.

"It is a changing picture for clients. Some days they will have an issue with their Risk-Weighted Assets going down and the next it might be an issue with LCR. We don't have visibility on that, so it is down to the client to respond to that and define their optimisation to us."

So the direction of travel has been and will continue to be that clients would like to be much more granular and directive about what their end-of-day allocation looks like.

This means relying less on triparty agents to calculate the most optimal allocation, but facilitating the most effective deployment of that view. However, to do this, firms need to have the capabilities internally to optimise across all of their operations.

Crowther says: "The focus used to be just about covering exposures with assets on a post-trade basis and as a result there was a lot of over-hedging and inefficiencies. Dealers are now looking at whether they are positioned in the right way based on multiple levers of efficiency – their asset/liability profile, their financial resource usage and their risk-return appetite.

"They want to know whether to reduce a particular trade because they don't have the right assets to fit in it or increase certain trades due to a pending funding or collateral requirement. It is the ability to monitor efficiency and make dynamic decisions on how to structure their financing books which they are looking for.

"Correspondingly, the point is that they need to do both pre- and post-trade optimisation and hence firms are working with vendors and service providers to further improve and tailor their solutions."

Purnell says this is resulting in a shift within banks regarding where collateral and external relationships are managed.

"It is an interesting dynamic as the operations collateral teams have always made the decisions of where assets should go and managed the triparty relationships but now it is becoming more of a trading relationship and that relationship internally within the sell-side is undoubtedly heading towards a more centralised structure," he says.

DIGITISING COLLATERAL SCHEDULES

To enable clients to have more control and flexibility over allocations and collateral selection, and to be able to respond more quickly to changing constraints, TPAs have been digitising collateral schedules and automating more processes around the selection and substitution of assets.

"Basic allocation theory is relatively simple in terms of understanding what is most optimal," says Gooden. "Where we get involved more today is in increasing the efficiency of deploying the optimal allocation.

"It was one thing to provide the clients with the tools to define the allocation but we needed to provide digitised formats of eligibility and schedules."

Because of the friction and costs inherent in moving collateral, there can be diminishing returns to full optimisation in which the cost of moving the assets eventually becomes greater than the benefit received from doing so. Reducing that friction increases the scope for optimisation.

"Every client we have is at a different stage in terms of where they are with the process of optimisation and have different approaches, which is only natural. Some are very granular requesting a specific security from a specific account because they have done their own analysis and know exactly what they want," says Gooden.

"Others will be more directional using what we have described as overlay, which is based more on delivering a specific type of asset such as fixed income into a specific account but they don't want to get involved in the granularity of specific instruments."

BNY Mellon and other agents are developing tools to facilitate links

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– Graham Gooden, J.P. Morgan

between themselves and their clients. BNY Mellon is working towards digitizing collateral schedules and giving clients tools to manage collateral more efficiently.

"Digitization of documentation and [collateral] schedules is the future," says Mark Higgins, a managing director at the firm. "The industry has employed the same methods for 20 years so change is long overdue."

J.P. Morgan's Gooden adds: "We are continuing to work on digitising schedules, which clients can now download, and providing more interactive search functionality so clients can identify what collateral different counterparties will accept. Another very effective tool is the ability to run hypothetical simulations for new transactions or to identify eligible collateral held away from the TPA.

"The next deliverable is online approvals, removing the paper schedules that are currently used. It is all about making the process to agree schedules and make changes easier and quicker.

"In addition to the operational efficiency that brings, it can make clients more comfortable with moving down the risk curve as they can adapt and react to market moves more quickly. Waiting for people to sign documentation and get that implemented is an impediment to an efficient market."

OPTIMISATION OF THE INFRASTRUCTURE

Efforts are also underway to harmonise processes across the European infrastructure. The European Central Bank is leading a task force to identify inefficiencies and propose industry-wide solutions to what it sees as an inherent inefficiency in the processing and transfer of collateral across the Eurozone.

There have been major advances in recent years in this respect with the T2S systems going a long way to greater mobilisation of collateral across custody networks and creating some elements of interoperability between triparty platforms.

However there remains a lot more work to be done and the real benefits of T2S are only beginning to become apparent. "The landscape has normalised but the changes have been glacial," says one industry expert.

The international ISO20022 standard for collateral management is growing in adoption by financial institutions and provides an opportunity to move towards more harmonised workflows and business processes as well as a common set of messaging protocols with interoperable market infrastructures.

Other initiatives are also underway. DTCC-Euroclear GlobalCollateral has launched the Margin Transit Utility, which is designed to aggregate a firm's holdings across all custodians and Central Securities Depositories.

A DRIVE TOWARDS STANDARDISATION

The ECB identifies standardisation of messaging and the "language" of collateral as key to greater efficiency. It envisages a world of interoperability between triparty agents and collateral venues across the market.

But with standardisation comes commoditisation and there are concerns that the drive to standardisation will decrease the room for competitive innovation.

In reality, the industry is a long way from standardisation. Every triparty agent or custodian has a different dialect of Swift messaging. That is a very simple example of the need for standardisation. But as you go further down the chain, the argument for standardisation decreases.

"Clients all say they want interoperability and standardisation but they like the fact we can offer bespoke schedules and eligibility sets, so as you broaden the discussion of what can be standardised there are clearly limitations and points where the client doesn't benefit," said one executive.

TIM MEREDITH

J.P. MORGAN'S VIEW

WHO DECIDES?

As the industry continues to debate the benefits and challenges of standardisation, how to manage collateral in changing markets, and how to adopt the benefits of fintech without creating unintended risk, we believe the key is collaboration. An active discussion amongst market participants is essential to defining future operating models and supporting liquidity.

One thing we can all agree on is that there's no 'one size fits all' answer. Each participant brings their own unique perspective to a discussion about market models. Through involvement in working groups, advocacy efforts, industry-wide conferences and thought leadership, we remain committed to sharing feedback with regulators and decision makers, and to bringing market participants together to discuss common challenges and evolving solutions.

> **"We are helping clients automate the processes of agreeing, reconciling, calculating and posting the collateral. The faster and more efficient that is done the greater the ability to optimise from a trading point of view and that is where the opportunities lie today."**
>
> *– Todd Crowther, Pirum Systems*

Another issue is who defines the standardisation. The industry needs to group around a single standard but if one triparty agent comes up with the standard, they will have an edge as it is adopted.

"If you talk about standardising how everyone interacts that punishes people who have invested to overcome the complexity and put in the hard work so what is the driver for that standardisation?" said the head of collateral at a bank.

Pirum's Todd Crowther says that the focus should be on standardising the processes, which would increase efficiency in the market without diminishing the opportunity to develop competitive edges. "We are helping clients automate the processes of agreeing, reconciling, calculating and posting the collateral.

"The faster and more efficient that is done the greater the ability to optimise from a trading point of view and that is where the opportunities lie today.

"The processes are the beta, managing things correctly and efficiency to your parameters, the alpha is the trading and the optimisation of the collateral trading book."

Phil Morgan agrees: "Spend your money wisely on things that are going to differentiate and create alpha for you and your clients. Processes that are operational or designed to meet a regulatory mandate don't provide a competitive edge and so why would firms look to build it. We can build it once and socialise the cost."

ON THE ROAD TOWARDS A BETTER ENVIRONMENT

Over the past five years, numerous barriers have been broken down within firms and across jurisdictions to create a more harmonious environment for collateral efficiency. This has been driven by client needs as well as regulatory change, says J.P. Morgan's Meredith, as clients look to maximise their inventories and enhance liquidity by moving their assets around globally.

Financial institutions have a far more granular understanding of the costs of collateral and have developed new principles, and methodologies for optimisation and allocation.

New technology solutions and processes have been launched that have gone a long way towards reducing friction between parties across the collateral spectrum and facilitating automation.

But there remains a long way still to go to create a frictionless environment and many barriers remain to a perfect market.

In the next section, we take a look at emerging technologies and concepts that will continue the evolution of the collateral environment and define the next decade of innovation across collateral management. ■

INCREASED USE OF PLEDGE ARRANGEMENTS

Another area of change reported by collateral managers in Europe is the increased use of pledge structures.

Pledge structures differ from traditional title transfer in that the transferee of the security retains legal ownership of the asset, subject to right of the receiver to sell the asset if the transferee defaults.

A pledge arrangement offers numerous benefits over title transfer including more favourable treatment for balance sheet and leverage ratio calculations and a reduction in some regulatory requirements. They do, however, require a separate legal framework, which can increase complexity.

Pledge is commonplace in the US market and in derivatives but there is growing usage of the arrangement in securities lending.

"The good thing about pledge is that it doesn't require people to completely rebuild the infrastructure or fundamentally change how they interact with their counterparties or triparty agents," says J.P. Morgan's Ben Challice.

"One can leverage existing infrastructure, unlike trading through a CCP which requires a lot of process change. Pledge has its own challenges to overcome, especially with respect to the legal construct, but will be quicker to adopt as it uses existing infrastructure."

Part 2: Evolving disruption: the near to medium term future of collateral management

Recent advances in technology are beginning to have a major impact across financial services. New technologies are coming on stream and financial institutions are becoming much more efficient at adopting them.

But while applications for new technologies and initiatives are becoming clear, the overall impact and level of disruption they will bring is far from obvious today.

In the second part of this study, we examine three key new concepts and technologies that have the potential not just to increase efficiencies and automation with the collateral environment but to revolutionise processes, participants and operations across the industry.

ALL-TO-ALL COLLATERAL PLATFORMS

The first disruptive concept is all-to-all collateral platforms. The concept has been around for some time and is more commonly termed peer-to-peer. However, the more suitable term "all-to-all" is gaining currency as the concept evolves.

The idea to create a platform through which entities across the market can exchange collateral directly with each other was born out of post-crisis fears of a shortage in available collateral to post against the vast swathes of over-the-counter (OTC) positions that regulators were mandating should be cleared or margined.

At the same time, it was becoming clear the capacity of banks to act as intermediaries in the market and to warehouse the risk in trading and collateral was going to be severely impacted by the capital and leverage rules within Basel III.

Several all-to-all collateral platforms were launched to great interest in the market and, while there has been some activity on them, so far they have not lived up to the hype.

Numerous factors are holding all-to-all platforms back. The first, says J.P. Morgan's Michael Albanese, is that the problem they were designed to address, the withdrawal of banks from the market, hasn't emerged.

"Banks haven't disappeared as intermediaries as much as some might have imagined. There are still large volumes of trades in repo, securities lending, etc. that rely on banks to intermediate. Put simply, fears that banks would completely step back have not come to pass," he says.


MICHAEL ALBANESE

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There are also operational issues for the buyside to take part. Firms need the expertise, staffing and technology to manage counterparty risk, credit and Know Your Customer checks. Ben Challice notes that outsourcing these activities to an agent would mitigate many of these operational concerns.

Other firms are launching similar models but with less disruptive goals seeking to provide greater mediation between banks and dealers rather than to disintermediate them entirely.

"An all-to-all market is taking shape but there is still a long way to go," says BNY Mellon's Mark Higgins. "Positive market conditions over the past few years have perhaps reduced the urgency to look for alternatives to bank-based financing, although there remains the need to access supplementary forms of liquidity. The peer-to-peer and all-to-all platforms that have emerged in the last couple of years provide additional options and a place to find new counterparties."

He added that any relaxation of the current constraints on banks' balance sheets would further reduce the need for all-to-all markets.

Another bank executive interviewed for the study voiced concern over the longer terms implications of the success of the all-to-all market.

"Non-banks operate in an environment where they don't have to abide by the same rules as us," he says. "If a bank offers a hedge fund a 180-day margin commitment they need to go out and fund that with somebody else and there is a certain amount of balance sheet leverage capital intensity to that.

"If they don't fund it they need to hold liquidity against it and that costs them money, or they can fund it through the treasury. The peer-to-peer market is not exposed to that but the more it grows the more the regulators will realise that there is risk building.

"Basel III was not designed to shift the risk elsewhere in the system, it was designed to address the risk. If liquidity leaks into the unregulated market, risk will build up. The implications of that have not played out yet. The largest hedge funds are becoming bank-like but they are not treated like a bank in regulatory perspective."

However, despite the challenges, as the market becomes more familiar with the concept and some of the operational issues are addressed, the appeal of all-to-all platforms is likely to grow. In addition, moves to standardise the collateral environment and tag securities will play to the strengths of the all-to-all platforms.

"All-to-all is one of the solutions that the market is looking for to improve liquidity,"

PIRUM'S VIEW

THE FIVE C'S

For our clients, Todd Crowther of Pirum says it's all about tackling the five "C's":

1. **Complexity** is escalating, for example, on uncleared margin requirements and mandated central clearing as more products—and participants—are increasingly caught by the regulations to post margin and manage collateralised exposures. This trend has driven firms to adopt a more strategic, centralised collateral management function that allows them to manage and view the varying demands for collateral against their pool of available inventory irrespective of entity and location.
2. **Cross-Product requirements** shared by repo, securities lending, OTC derivatives, exchange traded derivatives and treasury means that historically siloed businesses will need to be far more integrated and operationally efficient. Firms have reacted by reducing these silos and in turn have adopted a far more enterprise-wide approach where improved STP can reduce the burden of manual processing, key staff dependencies and scalability bottlenecks.
3. **Control of the collateral management process** is now mandated through various regulations, including the Dodd-Frank Act and EMIR, hence there is a need to adopt best practice and improve control frameworks. Firms are looking to reduce operational risk and meet tight, cross border collateral deadlines through the automation of key lifecycle events in the margin management process.
4. **Compliance** with incoming regulation such as Basel III has meant that affected banks and financial market infrastructure's must ensure sufficient resources are allocated for the efficient operation of margin call management. Collateral record keeping and monitoring on a near real-time basis has become essential to enable firms to manage daily requirements and limits as well as provide robust supervisory oversight and audit trail reporting.
5. **Capital impacts** of Basel III and IV regulation in terms of heightened capital adequacy and liquidity requirements have meant that the cost of and capacity for collateralisation have also been greatly affected. In response, firms are focused on gaining increased efficiency of finite financial resources by looking at more dynamic and complex methods of optimisation.

"For machine learning you need the data and you need to move towards a real time, standardised data model. From there you can start to automate more processes. All the manual touchpoints today can ultimately be automated."

– Rob Frost, Pirum Systems

says Global Collateral's Grimonpont. "Some of the platforms are becoming successful and have business going through them and other initiatives around securities finance are gaining ground. Rather than being the solution for the market, however, they will become another tool in the market."

ARTIFICIAL INTELLIGENCE, MACHINE LEARNING AND ROBOTIC PROCESS AUTOMATION

Artificial intelligence has been a presence in collateral management for several years, driving the algorithms that run collateral optimisation programmes. However, as data becomes more centralised and the technology advances, there is significant scope for expansion.

While the increasing sophistication of collateral optimisation algorithms has been driven mainly by the ability to take-in more data points and process information faster, machine learning, where algorithms learn from the data and improve themselves, is coming to increased prominence across financial markets.

Collateral efficiency is ripe for disruption from machine learning and associated artificial intelligence technology. Martin Seagroatt, marketing director for securities finance and collateral management at Broadridge, identifies several manual processes that could be disrupted by machine learning.

Legal agreement electronification, regulatory analysis, reconciliations and disputes and client counterparty communications are all processes that currently rely on large elements of manual and human interaction.

He says that collateral pricing, optimisation, liquidity forecasting and counterparty credit risk could all be significantly enhanced using machine learning.

Initiatives are underway across the market to introduce advanced AI into operations and processes. CACEIS uses an AI platform to decide lending fees for its clients in one of the first examples of commercial use of the technology in securities financing.

Other banks have also made senior hires with AI and Robotic Process Automation (RPA) experience with a view to broadening the application of the technology across operations.

"We are exploring ways to enhance highly manual, repetitive processes with RPA," says Rob Scott, head of custody, collateral and clearing at Commerzbank.

"Further advancements in RPA could, for example, enhance not only the monotony and predictability of process but also allow the expert to engage with clients much earlier on, therefore speeding up a process. That would save time, which can then be better used to understand and optimise the existing client experience."

A consolidated and accurate view of data is central to effective implementation of AI solutions adds Rob Frost, head of product development at Pirum.

"For machine learning you need the data and you need to move towards a real time, standardised data model. From there you can start to automate more processes. All the manual touchpoints today can ultimately be automated."

DISTRIBUTED LEDGER TECHNOLOGY AND TOKENISATION

All-to-all platforms and machine learning represent evolutions in existing processes but distributed ledger (DLT) or blockchain technology has the potential for revolution.

A number of initiatives are already underway in the industry and could fundamentally change how collateral is processed but the trend is likely to be evolution before revolution.

DLT offers ways to increase efficiency exponentially through the creation of a single, immutable record of transactions. Already projects are under way to "tokenise" collateral so it can be processed on a blockchain, reducing settlement times and negating the requirement to move collateral.

Tokenisation effectively is the creation of a digital record of ownership. In theory, any asset with a specified value can be tokenised from a Picasso painting to a Treasury bill. So in a tokenised world, ownership of every asset can be digitally tagged according to its owner.

While this doesn't sound like a huge innovation, when this is combined with a blockchain, this record of digital ownership can be instantly and immutably transferred.

Not only does this mean that, with the correct legal framework, assets can be kept in a custody account and only the token (i.e., record of legal ownership) be transferred, the efficiency of transfer on a blockchain means that any asset can be broken up into multiple parts with different owners ascribed different percentages, potentially vastly increasing the pool of available collateral in the market and the specificity with which collateral can be allocated.

In addition, the ability to tokenise any asset means that collateral-to-collateral trades can be made directly between asset classes that previously would have been difficult if not impossible such as a collateral upgrade trade directly from gold to Gilts. It also means that baskets can be created of almost any assortment of collateral.

HQLA-x, a distributed ledger pioneer is beta-testing its platform that will enable the tokenisation and trading of Digital Collateral Receipts, tokenised baskets of collateral, which will trade on R3's Corda blockchain.

"There is clearly a need for interoperability in the collateral market that will enable firms to move collateral around in a cost effective and instant way," says Olly Benkert, chairman of HQLA-x.

"The industry has had an aversion to working together to achieve this, which is understandable as they compete with each other. We have come up with a way of tokenising baskets on a distributed ledger and swapping the tokens so that the collateral doesn't have to move between custodians."

The firm has created a legal framework that it says enables full legal title transfer and in March, Credit Suisse and ING conducted a test trade on the platform exchanging legal ownership of a basket of securities but without the securities moving between their respective custody accounts.

In August, Deutsche Bourse announced an investment in the firm and said it will work with it to connect Clearstream to the platform.

"What we need to be successful is for the custodians to come on board. We are not asking the banks and buyside to completely overhaul how they operate collateral management for this to work. We need the custodians to feed into our platform to maintain existing infrastructures," says Benkert.

J.P. MORGAN'S VIEW

WHY WAIT? TODAY'S ENABLING TECHNOLOGY

In addition to blue sky fintech programs and investments to address market changes, market participants can immediately benefit from enhancements in operations and technology that increase efficiency, reduce costs, improve clients' experience and increase market connectivity.

Collateral providers and takers have more tools available today than ever before. Intraday reporting and the ability to view and mobilise collateral on an ad hoc basis are essential to managing a global portfolio and getting the right piece of collateral to the right place at the right time. Advanced data analytics already aid decision making by the client by providing a comprehensive view of data for a client across multiple desks and regions. And while online access to eligibility schedules is convenient, it's so much more: clients can more easily identify a counterparty who will accept a particular asset, and have the flexibility to adapt more quickly to changing market conditions. As fintech initiatives are realised, we anticipate additional efficiencies and connectivity.

> **"The world is changing but it is being built on the existing building blocks of the industry. It doesn't mean that the world won't change at any point but currently the new initiatives are being built alongside existing infrastructure and the people who are best place to innovate are the providers of the infrastructure today."**
>
> *– Olivier Grimonpont, Global Collateral*

J.P. Morgan's Challice is excited by the potential of tokenisation: "It is something we are exploring and clients like the concept.

"We see our role as the custodian/collateral manager as the translation layer between the old world infrastructure of physical settlement, custody banks, agency banks and sub-custodian networks and the new world of that digital representation," he says.

EVOLVING EXISTING INFRASTRUCTURE

For now at the very least, DLT is expected to complement existing processes and workflows rather than overhauling the infrastructure.

Challice notes that tokenisation is not that different to the shift to pledge in many respects.

"Pledge is a different legal representation of a collateral obligation from title transfer. But a token could be fully digitised and a much more mobile representation of that," he says,

BNY's Mark Higgins also sees DLT as an evolution. "Triparty agents use the client's custody footprint to make decisions about how to manage that client's collateral, but in a DLT world do you need to hold the assets within a confined custody environment?

"If under a DLT construct assets don't need to be moved, do you need to have a custodial network and physical accounts? These are questions that will be addressed over time. Triparty collateral management will continue to exist, but will it look like it does today? Probably not."

Looking at the collateral cycle, there are clearly areas in which DLT can continue to improve efficiencies. Despite recent advantages, current settlement networks look outdated.

The industry has come a long way from the need for paper certificates for title transfer but it still takes more than 24 hours to settle. Tokenising the collateral on a blockchain could reduce that to seconds.

"Blockchain has the potential to streamline the efficiency and significantly reduce costs and duplicative reconciliation across various organisations," says Commerzbank's Rob Scott.

Others believe that progress will come without the need for blockchain solutions. "My view is that DLT is not a critical step. It is one of several possible solutions," says Albanese.

"Other solutions the industry has attempted in the past are locking down a piece of collateral in a control account and documenting legal terms that make it clear what the custodian needs to do if the collateral provider default.

"DLT has accelerated the conversation and has got some parts of the market excited but it is not a sine qua non of being able to achieve certainty of legal ownership without moving the collateral."

Grimonpont concludes: "The world is changing but it is being built on the existing building blocks of the industry. It doesn't mean that the world won't change at any point but currently the new initiatives are being built alongside existing infrastructure and the people who are best place to innovate are the providers of the infrastructure today." ■

Part 3: Towards a perfect environment for collateral?

Financial institutions have invested heavily in collateral over the past decade and brought many new innovations.

With the growth of machine learning and big data combined with the advent of quantum computing and distributed ledger technology, the pace of change across the collateral environment could rise exponentially.

But where is the industry heading, what could lead to a near perfect environment for collateral and what are the barriers to change today?

"The ideal is a situation in which there is seamless transfer between collateral supply and collateral demand," says J.P. Morgan's Michael Albanese. "It is one in which no one needs to search for an asset - if an entity needs a specific piece of collateral, it should be able to access it instantly.

Gooden adds: "Nirvana would be a fully-inventorised, priced and local pool of collateral and the ability to make automated decisions based on that. It is the ability to move a specific piece of collateral cost-effectively and efficiently with a frictionless transfer."

Any future 'nirvana' has to be built on a strong foundation of asset safety and rigorous controls, which is critical to lenders and particularly important in times of crisis. Most people would agree with these visions for a perfect state. A perfect collateral environment is a single pool of visibility and access, fully automated, exact selection and allocation, and instant and guaranteed settlement protected by a global legal structure.

It is one in which any asset can be transferred to and from any entity in the world instantly with no friction or counterparty risk. Deadlines for collateral calls would be a thing of the past as collateral would move automatically and in real-time.

The cost of collateral would be fully embedded into a trade and entitlement transferred in one Straight-Through Processing (STP) action with real-time and constant optimisation. In a default, the ownership of collateral would be instant and certain.

The question is how to get there and what are the major near-term barriers that need to be overcome first on the road to nirvana.

THE ROAD TO NIRVANA

Albanese identifies four key areas that are currently holding back development. First is that firms remain able only to look within the confines of their own collateral management programmes.

"The perfect environment therefore is an all-to-all across all collateral agents globally," he says.

Then comes the challenge of passing the book between timezones, a process that is becoming more common in the light of onshoring of financing among banks.

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– Graham Gooden, J.P. Morgan

"Increasingly because of Brexit or the realignment of legal entities in which desks are managed locally, the ability for banks to pass the books globally involving multi-step reuse or rehypothecation is ideal," he says.

Third is the current system for moving cash between banks, which remains based on wire transfer and results in intense timing and deadline pressure to meet collateral calls.

Related to the inefficiencies inherent in moving cash and collateral, Albanese says, is the need to develop an intra-day market.

"As the cost of intra-day liquidity goes up, can we take some of the overnight and end of day principles of managing a good collateral eco-system and apply them to the intraday market? If someone needs cash for four hours or to borrow a security for three hours, they should be able to consider intra-day sec lending and intra-day repo," he concludes.

That is a long way from where we are today. "There is friction across the whole cycle today. From agreeing the trade to the settlement of collateral there are frictions," says Pirum's Rob Frost. "The challenge becomes reducing those frictions process by process."

Technology providers have a key role to play in that process. By mutualising the cost of advancement and acting as a neutral third party to link competing firms, vendors can intermediate and standardise processes.

As more of the cycle of collateral becomes standardised, the processes will become commoditised and the friction can be reduced.

FROM DIESEL TO DISTRIBUTED LEDGER

BNY Mellon's Mark Higgins compares the transformation underway in the collateral industry today to that in the automobile industry.

"The car industry is undergoing a transformation from combustion engines to electric vehicles. That involves a change not only in how cars are powered, but also a change in the infrastructure," he says.

"I am not necessarily going to buy an electric car today because the infrastructure isn't fully there yet in terms of charging stations etc. But I am pretty sure that I will be buying an electric car within the next 20 years."

It is an interesting analogy. Electric car technology changes how cars function and improves a number of key metrics in the car industry such as efficiency and environmental footprint, two of the major concerns in the market today.

PIRUM'S VIEW

SFTR REPORTING CONSIDERATIONS FOR COLLATERAL MANAGERS

by Duncan Carpenter, Head of SFTR at Pirum

Although Article 4 of the Securities Finance Transaction Regulation (SFTR) is a reporting exercise, it is likely that it will impact several upstream practices and processes of firms. The reporting begins in phases, based on the anticipated adoption of the level 2 SFTR text in Q1 2019. Post the adoption process, there is a 12-month window that firms are given before the go live date.

Phase	Institution Type	Estimated start date
1	Investment Firms and credit institutions	Q1 2020
2	CCPs and CSDs	Q2 2020
3	Insurance, UCITS, AIF, Pension funds	Q3 2020
4	Non-Financial counterparts (NFCs)	Q4 2020

High level Collateral Considerations

Firms should assess how well their existing processes sit within these requirements and deadlines.

Based on the work Pirum has been doing with its clients we've identified a number of key considerations:

Detailed reporting – participants need to report key details of both the principal transaction and any associated collateral. The amount of detail is substantial with 153 distinct fields reportable.

Reference data – reporting requires individual data points not readily held by firms. For example, the Legal Entity Identifier (LEI) of issuer for each security used as collateral. The market also needs to consider gaps where issuers have yet to register for a LEI (especially where they are outside the EU and/or have no requirement to get one).

Reporting frequency – transactions are reportable on T+1 with the associated collateral to be reported on either T+1 or S+1 (dependant on the method of collateralisation used). S+1 reporting accommodates for re-allocation of collateral within the Tri-party process, which still presents a challenge to receive data, process and report the information in a timely manner.

Collateral allocations at a principal level – within agency lending structures collateral is often received in pools on behalf of multiple beneficial owners. The current S+1 ALD process of allocating collateral to the various principals presents the market with timing challenges.

Collateral re-use reporting – all participants need to provide information on either their actual level of collateral re-use where individual securities can be tracked or an estimate of re-use where they cannot. The calculation is not straightforward and requires collating data across disparate systems as a single ISIN.

The Pirum solution looks to tackle some of these challenges identified, including consolidating data from multiple systems, enriching existing position data with reference data and the reconciliation of collateral between lenders and borrowers.

In the same way, new technologies and processes in collateral management improve the efficiency and automation of existing processes.

But perhaps a larger change is underway in both industries.

For automobiles, the growth of automated driving technology could within the next 30 years completely change the very concept of driving.

We will still use cars to get from A to B but car ownership will be a thing of the past, the act of driving a rare past-time and entirely new infrastructures and networks will come to fruition.

In the same way, collateral management will still be used to collateralise an exposure with an asset, but the entire infrastructure could be unrecognisable from today.

If this change happens, DLT will be the driver. The tokenisation of collateral will be commercially available in the coming months, take-up will likely be slow initially but as people become familiar with the concept its use will grow.

However, it is the advent of smart contracts that will provide the most radical transformation. A smart contract is like a token in that it is a digitised record that sits on a blockchain. However, smart contacts also offer the ability to embed obligations and agreements bringing vast new opportunities.

As the technology is developed, the complexity and scope of what can be embedded within a smart contract will increase.

A collateral agreement signed as a smart contract linked to tokenised assets on the blockchain could automate the exchange of collateral ownership between counterparties in minute fractals of both units of collateral and seconds creating real-time, immutable and immediate transfer of collateral ownership.

In time, all aspects of a trade could be embedded within the contract. Counterparty risk would be overcome from the guaranteed and real-time settlement, reducing the barriers to the development of a truly all-to-all market.

Because all collateral across the industry can be stored in tokens on the blockchain, firms can search instantly for any asset and algorithms will automatically negotiate and execute smart contracts to secure any part of that collateral.

While this clearly represents a step-change in how collateral is processed, quite how disruptive this will be to current participants in the market remains to be seen. Current initiatives in finance are based around R3's Corda and the Hyperledger initially designed by Linux.

These are both permissioned blockchains rather than the open blockchains that power bitcoin and other cryptocurrencies. Permissioned blockchains bring advantages in the fact that they don't rely on the Proof of Work concept that powers the bitcoin blockchain consuming vast amounts of electricity to mine the coins.

It also secures the continuing importance of the incumbent intermediaries in the market who become the guardians of the blockchain and the source of the trust inherent in the technology.

Of course, there is a long way to go to get there and many doubts remain as to the potential of blockchain technology to achieve the nirvana. Questions remain over the speed, capacity and scalability of the technology itself.

There will also be different initiatives that move at different paces possibly leading to similar issues with interoperability that exist today. But it is clear to see how the concepts enabled by DLT could revolutionise the industry and the possibilities and capabilities of the technology will rapidly develop.

Bilgehan Aydin, head of collateral solutions at Commerzbank, says: "I don't think that overnight you will have everything on blockchain but piece by piece you will have multiple blockchain environments that will have to communicate and form the new basis."

"Ultimately, imagination is the limit" ■

"I am not necessarily going to buy an electric car today because the infrastructure isn't fully there yet in terms of charging stations etc.
But I am pretty sure that I will be buying an electric car within the next 20 years."

– Mark Higgins, BNY Mellon

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